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Examining the effect of random student drug-testing in a high school setting

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EXAMINING THE EFFECT OF RANDOM STUDENT DRUG-TESTING IN A HIGH SCHOOL SETTING

by
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ABSTRACT

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EXAMINING THE EFFECT OF RANDOM STUDENT DRUG-TESTING IN A HIGH SCHOOL SETTING
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The purpose of this exploratory investigation was to ascertain the effectiveness of decreasing drug use in a high school setting by implementing a random student drug-testing program. High school students who were involved in any athletic or extracurricular activities or who were applying for a parking permit in one local school were required to obtain parental permission to participate in a random student drug-testing program. Approximately once a month, an outside agency performed confidential and private urinalysis screening at the high school on 10-14 students whose names were chosen randomly using a computer program. If a urine test was positive for any drug, the contracted company's physician reviewed the results of the finding and notified the parents of the results. Outcome variables were students' anonymous responses on the American Drug and Alcohol Survey, which was administered yearly. The introduction of the random student drug-testing program was associated with decreased self-report use of drugs and alcohol within the first year of implementation. Increased self-reported drug and alcohol usage was observed within each cohort of students as they progressed to the next grade level. Implications for high school policy for random student drug-testing are discussed.

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

Heavy drug and alcohol use is an increasing problem among high school students. A recent survey reported that 70.6% of high school seniors had used alcohol over the past 12 months, while 48.0% had used alcohol over the past 30 days (The Monitoring of the Future Study, 2004). Whereas marijuana use over the past 12 months and 30 days was 34.3% and 19.9%, respectively, use of other illicit drugs was less prevalent. These results are presumed to underrepresent actual illicit drug and alcohol use among high school students, due to self-report bias and the exclusion of students who are dropouts and truants. Through the 1990s, drug use among high school students steadily increased. Recent results of the National Monitoring the Future survey indicate that illicit drug use among 8^{th}, 10^{th}, and 12^{th} graders has decreased or remained stable over the past few years (NIDA, 2006), but inhalant use has been rising over recent years, specifically among younger students. These numbers remain highly concerning.

Despite these overall decreasing trends, drug use among high school students still remains a major issue that needs to be addressed with more preventative measures. Adolescents who begin to use illicit drugs, such as marijuana, at a young age are more likely to be prone to heavier alcohol use later in life (Getz & Bray, 2005). Research suggests that delaying the onset of alcohol and drug use in adolescence reduces the probability of later involvement of heavy use of other illicit drugs (Tonkin & Sloboda,

2003). Many students continue heavy use of marijuana, alcohol, and tobacco. In addition, although a small percentage of population uses other drugs such as ecstasy, inhalants, cocaine, hallucinogens, and prescription medications, their use among high school students is concerning (NIDA, 2006). Steroid abuse is another increasingly prevalent area of drug use among high school students, specifically athletes (The Monitoring the Future Study, 2006).

This alarming prevalence of drug use among high school students has lead to the development of prevention programs, in an effort to decrease use. Three common elements in a successful prevention program include increasing youth connectedness by fostering supportive relationships with youth and their families, using a multifaceted intervention that incorporate youth and their families, and creating dual goals of reducing drug risk factors and increasing protective factors (Hahn-Smith, 2000). These programs follow school-based educational and social-influenced models. School-based prevention programs are considered effective if they delay the onset of drug use and are cost-effective to the school (Tonkin & Sloboda, 2003). These programs can consist of educating students on types and effects of drugs, peer pressure, and work on self-esteem building, while social-influenced programs include a peer/family/counselor component that adds support to students during the program. These programs are implemented between 4th through 8th, grades, while effectiveness of the programs is determined through percentage of drug use during high school.

School-based Prevention Programs

With student-athletes comprising a large population in schools, preventive drug use measures have been implemented to decrease performance enhancing drug use. Prevention programs, such as Adolescents Training and Learning to Avoid Steroids (ATLAS) have been put in place to educate and offer alternatives to student athletes (Fritz et al., 2004).

Adolescents Training and Learning to Avoid Steroids (ATLAS) was developed to prevent high school football athletes from using performance-enhancing steroids (Fritz et al., 2004). By using a team approach, the program provides athletes with alternative information regarding nutrition and strength training. Research done by Fritz et al. (2004) did not report specific percentages of anabolic androgenic steroid use among athletes, but did report difficulty in demonstrating effect of program, due to variations among students pre-intervention knowledge. Students gained knowledge about use, effects and types of anabolic androgenic steroids by participating in the program. Findings indicated that athletes with a higher degree of intent to use anabolic androgenic steroids who participated in the ATLAS program showed a decrease in their intentions to use anabolic androgenic steroids.

One widespread prevention program is Drug Abuse Resistance Education (DARE), where the programmatic goal is to delay the start of drug and alcohol use in adolescence (Zagumny & Thompson, 1997). The DARE program consisted of teaching students topics, such as types of peer pressure, eight ways to say no, developing self-

esteem, and ways to deal with stress. Though it was found that there was a significant decrease in drug use between the 1991 participants and the 1996 participants, this decrease could not be accredited to participation in the program. In addition, students reported no decrease in drug use as they reached the high school level rendering the program to be ineffective. Another 10-year follow-up study, done by Lvnam et al. (1999) found that there was no difference between DARE participants and non-participants in terms of self-esteem, drug use or attitudes, when reevaluated at age 20.

Similarly, the Say Yes First (SYF) program uses an educational model with a case management component and the inclusion of the students' families (Zavela, Batthistich, Gosselink, & Dean, 2004). The program is used with students from 4th to 8th grade. The students are then assessed again in 11th grade. The object of the program is to increase academic success, reduce risk factors, increase involvement in extracurricular activities that promote non-drug use messages and delay the initial onset and/or frequency of drug and alcohol use. Results of this model found that students who participated in the SYF program reported lower usage of alcohol, tobacco and illicit drugs in high school. These participants also had higher academic grades, lower school absences, positive attitudes towards school, less negative self-appraisal, as well as reporting better relationships with their families (Zavela, Batthistich, Gosselink, & Dean, 2004). Again, similar to the DARE program results could not directly attribute drug reduction to participation in the program.

The Urban Youth Connection Program includes components comparable to the SYF model's case management component (Valentine, Griffith, Ruthazer, Gottlieb, &

Keel, 1998). The program model's goal is that most successful prevention programs work towards harm reduction. This program provides counseling, mentoring, and academic support along with the educational component to students. This program was evaluated primarily with Hispanic and African American middle and high school students (Valentine, Griffith, Ruthazer, Gottlieb, & Keel, 1998). Though the program was designed to prevent drug, alcohol and tobacco use, significant effects were found only for alcohol. Participation in the program reduced the 30-day use of beer in middle school students, and liquor, beer, and wine in high school students.

These school-based prevention programs had the same goal of reducing harm of drug use in students. The programs all used didactic methods with slight variations, such as including case management or mentoring to students in an effort to increase effectiveness of decreasing drug use. Program effectiveness was evaluated by student self-reports of drug use or intentions of drug use. These reports all indicated that these prevention programs were ineffective or limited in decreasing high school students' intention to use drugs and alcohol. Due to this lack of effectiveness with these means of prevention, newer models of prevention have focused on the social-influenced component of drug prevention. These programs continue to have the same goal of harm reduction by placing more focus on the impact of peer pressure on students' drug and alcohol use and utilizing the students' themselves to teach one another on the effects and harm of drug abuse.

Social-Influenced Prevention Programs

Orlando, Ellickson, McCaffery, and Longshore (2005) implemented a program incorporating a social-influence approach, finding that successful school-based programs included more than just an educational component. They found that prevention programs improve by increasing the impact of peer influence on drug and alcohol use. The curriculum for Project ALERT focused on delaying the onset and the progression of drug use by modifying specific perceptions, attitudes and behavior associated with alcohol and drug use. Results suggest that the greatest influence on intention to smoke cigarettes was peer influence, while "positive beliefs about the consequences for drinking" was the highest reason for use of alcohol.

Other examples of socially influenced models or peer-led school-based programs are student clubs high school students' form, such as Students against Drunk Driving or Students Working Together against Tobacco. Drug, alcohol and tobacco prevention programs like these are present in 63%, 80% and 50% of schools, respectively (Vanderwaal, Powell, Terry-McElrath, Bao, & Flay, 2005). These programs are voluntary for students to join, and are generally student-led organizations. Vanderwaal et al. (2005) found that specific alcohol abuse prevention student led organizations were found to be significantly associated with lower binge drinking, equal to a 15% reduction in overall use over past two-week period. Tobacco reduction programs were found to have marginally significant effects on past 30-day reduction.

Minimal success has been demonstrated by these drug prevention programs. None of the aforementioned programs were able to concretely demonstrate prevention of

delaying the onset of drug use in high school students. The majority of the programs' curriculums are used in elementary and middles schools, without much follow-up prevention for students in high schools.

Random Drug Testing Prevention Programs

Ineffective educational and socially influenced prevention programs have led to the start of random drug-testing in high schools. Random drug-testing policies have been implemented in the criminal justice system and in workplace settings. Administrators at 400 colleges and universities were surveyed regarding their current or proposed drug-testing policies for employees, faculty, and students (Fudala, Fields, Kreiter, & Lange, 1994). Responses indicated that 77% of schools had drug-testing policies for their employees, faculty and nonfaculty, and 83% for its students. Pre-employment drug-testing is used to assess potential work related issues that may arise.

Normand, Salyards, and Mahoney (1990), evaluated the relationship between positive drug test for illicit drugs with absenteeism, turnover, injuries, and accidents. No significant associations were detected between drug test results and injuries and accident occurrences, while there was a 47% higher rate of involuntary turnover with those employees who tested positive. Konovsky and Cropanzano (1991) looked at perceived fairness of employee drug-testing. Findings were that procedural justice, meaning set consequences for positive tests within the drug-testing program predicted job satisfaction, commitment, management trust, turnover intentions, and job performance.

Drug-testing has also been used with athletes at the Olympic Games, colleges, and

at high school levels, regionally and nationally. Athletes have been targeted as potential users of performance enhancing steroids (Goldberg et al, 2003). Drug-testing has been implemented to identify users and prevent use of steroids and other illegal substances (Coombs & Ryan, 1990). Intercollegiate athletic programs were prompted by the National Collegiate Athletic Association (NCAA) to implement mandatory drug-testing policies (Zemper, in press) when it was determined the prevalence of drug use among these athletes needed to be addressed (Uzych, 1991).

One of the first studies to evaluate the effectiveness of mandatory athletic drug-testing on student-athletes was done by Coombs and Ryan (1990). A random drug-testing policy was implemented with intercollegiate athletes. Athletes were required to be tested at their preseason medical examinations and randomly through their respective seasons. Athletes were also surveyed and a small percentage interviewed at the beginning and end of each year. An initial positive result on a drug test lead to voluntary counseling and immediate retesting, while a second positive result lead to the athlete's Head Coach being informed and mandatory counseling.

Findings were that drug-testing was in general effective in identifying and preventing drug use. This program of random students drug-testing resulted in significantly less use of marijuana among tested athletes compared to the comparison subjects' use (30.8% vs. 46.2%, respectively). This significance was also found with LSD use. Though no other substances were statistically significant, consistent patterns in decreased use were found (Coombs & Ryan, 1990). Although the findings from this first attempt to evaluate a random student drug-testing program with college athletes were

encouraging, the researchers reported that these results might be artificial because athletes were apparently quite skilled in avoiding detection. Athletes were able to avoid detection by timing their drug use prior to testing; using certain drinks, foods, or supplements to dilute their sample, or using someone else's urine (Coombs & Ryan, 1990).

To understand how random student drug-testing works to reduce drug use, athletes were interviewed about the program. Athletes who were participating in the drug-testing program reported to be more competent in these methods of avoiding detection. Interviews were taken from 95% of all athletes that were selected to be drug tested. Athletes reported more concern with being suspended from their team rather than the potentially harmful effects of drug use on their bodies. Athletes disclosed using the random drug-testing as excuses while out in social situations. It was found 23.3% reported using drug-testing as an excuse to reduce their "partying," and 52.8% reported using drug-testing as their a "socially acceptable way to refuse drugs" (Coombs & Ryan, 1990).

Random drug-testing is commonly utilized in employment and university settings to prevent harm from drug use. A logical extension then is to adapt this module for use in high schools. Implementing random drug-testing policies in high schools has been surrounded by controversy and debate. The core tension in this controversy is the individual's constitutional right versus the rights of an institution (i.e. school). Many individuals feel that allowing students to be drug tested is going against their fourth amendment rights, which grants freedom from searches unless there is probable cause

(Berger, 2003). The American Academy of Pediatrics argues that adolescents with decisional capacity, with or without parental consent should not be forced to participate in drug-testing unless for a medical or legal reason (AAP, Committee on Substance Use, 2006). Court decisions have allowed for a search and seizure that would otherwise be considered unreasonable or without probable cause to be allowed if the state can show a "special need" apart from a general interest in crime control (Vernonia School District v. Acton, 1995; New Jersey v. T.L.O, 1985). The U.S. Supreme Court ruling of the *Vernonia School District v. Acton (1995)* case set the precedent that random drug-testing should be allowed with athletes. In *Board of Education of Independent School District No. 92 of Pottawatomie County v. Earls* (2002), the Supreme Court again upheld school districts rights to drug test students who participate in extracurricular activities, in order to keep schools safe.

Following this Supreme Court decision, the Office of National Drug Control Policy (ONDCP) recommended that high schools screen all students with urine drug tests (ONDCP, 2002) While many primary care adolescent medicine providers disagree with this decision (Levy, Harris, Sherritt, Angulo, & Knight, 2006) others feel that drug-testing will be an effective form of prevention against the start of drug use among new users and limit use of current drug users (Fudala et al., 1994). Despite these case law precedents, heavy controversy regarding the constitutional issues of drug-testing students continues and research studies assessing the effectiveness of drug-testing in high schools are under heavy scrutiny by ethical review boards. Arguments include that the federal decision to implement drug-testing policies is not evidenced based (Irwin, 2006).

Despite these issues, a few studies have attempted to evaluate the effectiveness of random student drug-testing programs in high schools. Project SATURN (Student Athlete Testing Using Random Notification) was the first evaluation of a drug-testing program (Goldberg et al., 2003). Drug-testing was school policy and a prerequisite for sports participation. Students were aware that no police involvement would occur with a positive test, unless the student refused mandatory counseling. The program was evaluated by questionnaires asking about use of alcohol, illicit drugs, ergogenic substances, and "athletic" supplements. Participation in the questionnaire was voluntary. Goldberg et al., (2003) measured the use of illicit drugs, alcohol, and steroids in several high schools in Oregon, using a method of drug-testing and questionnaires. The drug-testing policy and program was associated with significant reductions in past 30-day self-reported use of illicit drug and athletic enhancing supplements. Neither alcohol nor tobacco use was altered during the study. Goldberg et al. (2003) hypothesized that this may have occurred because alcohol has a short half-life making it difficult to detect. Tobacco was not included as a tested substance. It was found students attitudes towards perceived consequences of drug use, greatly influenced these results. All in all, drug-testing was found to be effective in decreasing drug use within the student population.

Irrespective of the ethical dilemma posed by random student drug-testing, another concern is that these programs do not target those students most at risk for drug (Bukstein, 2004). Students involved with athletics and extracurricular activities are found to have the lowest reported drug use rates (Bailey, n.d.). This belief that random student drug-testing programs are targeting those students least at risk only heightens the

potential contrast between the benefits versus risks of such program. With minimal research done, determining the effectiveness of current drug-testing policies is difficult.

Unfortunately, Shamoo and Moreno (2004a) explored the ethical questions surrounding the program and study design and questioned whether ethical research could be conducted with high school students in the context of a mandatory drug-testing program. The SATURN protocol was found to include "inadequate informed consent documents, problems with confidentiality, and young age and social status-related vulnerability of the subjects" (Shamoo & Moreno, 2004a, p. 30). It was argued that schools were coerced to implement a mandatory drug-testing policy by having expenses covered from participating in the study. Students were forced to participate in the study by refusing to allow them to participate in extracurricular activities if they did not consent to the mandatory drug-testing. Shamoo and Moreno (2004b) also stated that the Office of Human Research Protection found substantial changes to the study's protocol that were not subjected to review by the Institutional Review Board.

Yamaguchi, Johnston, and O'Malley (2003) reviewed drug-testing practices in schools and the association between drug-testing and reported drug use in students from 1998 to 2001. Utilizing the schools participating in The Monitoring the Future study, they examined the 18% of schools who had implemented some form of drug-testing program. They found that 14.15% of the schools drug tested students due to cause or suspicion rather than randomly but that the amount of these schools was not statistically significant. Student reports of drug use also indicated that among 8^{th}, 10^{th}, and 12^{th} graders in schools with random student drug-testing, of any kind, this program did not

affect drug use. Frequency and prevalence of marijuana or other illicit drug use by students remained consistent with national averages (Yamaguchi et al., 2003).

Finding a compromise between the research and ethical issues can be difficult in this area. By including not only mandatory participation of students in extracurricular activities, but also voluntary participation of students in the drug-testing program as well, this program, evaluated in this study looked to bring a broader range of students into the random drug-testing pool. The purpose of this study was to investigate the effectiveness of a random drug-testing program with students in a high school setting. Implementation of a random student drug-testing program in a school population of non-identified drug using students will result in self-reports of decreased drug use and a decrease in positive drug test results. A secondary hypothesis is that results will vary as a function of student status. Specifically, drug-testing results will vary as a function of whether the student is in an extracurricular competitive athletic activity, non athletic extracurricular activities, student clubs, students requesting parking permits, and students who voluntarily entered the random student drug-testing program. A student's status will decrease the positive drug test resulting from random drug-testing, with students participating in extracurricular athletic and non-athletic activities having the lowest rate of positive results. Volunteers and students participating in the drug-testing program due to requesting a parking permit will result in more positive drug test results.

CHAPTER TWO

METHOD

Participants

Participants are high school students (9^{th} to 12^{th} grade) from a school enrollment of 985 students. Students who participate in school-sponsored athletic, extracurricular activities, student club organizations, sign up to obtain a car permit, or volunteer to participate are entered in the random pool for drug testing. When a student signs up for one of these activities, an informed consent form is sent home for a parent/guardian to sign. Parent/guardians for these students must provide signed consent for the student to participate in the activity and the random drug-testing program.

In accordance with Federal Law 42 CFR, all information concerning a student's involvement in the drug testing program or intervention process is confidential. Information can only be released with written consent. Records are kept separate from academic records and are destroyed upon the student's graduation or official transfer from the school. The prosecutor's office has no access to any student names, records, or results.

Random Student Drug Testing Program

The high school contracted with an independent drug-testing company to manage

the drug-testing component of the program. Urinalysis was chosen as the method of drug-testing. Samples were tested using a ten-panel test. The analysis were tested for the following substances: Alcohol, Amphetamines, Barbiturates, Benzodiazepines (Valium and Lorazepam), Cocaine, Marijuana, Methadone, Opiates (Codeine), Phencyclidine (PCP) and Propoxyphene (Darvon). Positive tests are confirmed using Gas Chromatography/Mass Spectroscopy. The two main problematic substances are alcohol and marijuana. The test panel includes detection of marijuana at the 20ng level, whereas the standard detection level is 50ng. The lower cut-off is to allow for possible identification of causal users.

The high school provided the company with students' gender, class year, and code number. Students were randomly selected through the contracted drug-testing agency by computerized software. Students were assigned code numbers to keep student confidentiality. Once randomly selected through the computerized software, the school's Substance Awareness Coordinator contacts the students' parents to inform them of the testing, and then retrieves the selected students from their classrooms. Students are taken to a private training room to provide a sample for a same gender collector. The collector observes the sample given, and then follows approved collection protocols and chain-of custody procedures. Any student who is absent when randomly selected for testing were tested on the next testing date. Students who refuse to provide a sample are considered to have given a positive test and are treated as such.

The drug-testing company provides to the Substance Awareness Coordinator written lab results reviewed by a medical review officer for each sample. In the instance

of a positive result of Benzodiazepines, Amphetamines, Opiates, or Propoxyphene that could potentially be prescribed by a doctor, the Substance Awareness Coordinator is informed that the medical review officer needs to provide additional review. The Substance Awareness Coordinator supplies the phone number of the medical review officer to the parents/guardians and inquires as to any medical reasons for the positive results of the substance. The student's parents then provide satisfactory documentation of use of prescribed medication to the medical review officer. The Substance Awareness Coordinator is then informed of the results of the review by the medical review officer.

Positive drug results not explained by legitimate medical reasons resulted in the intervention of the school's Random Drug-Testing Policy. Students who test positive did not receive any academic sanctions. The first positive test resulted in the student being suspended from their activity for a three-week period. The student then had to be examined by a physician in order to return to school and the student and parent/guardian consulted with the Substance Awareness Coordinator. During this consultation, the student was evaluated for the appropriate level of intervention.

The minimum required intervention for the first positive test was five educational sessions with the Substance Awareness Coordinator. If a second positive drug screen occurred the student is then suspended from their activity for 60 days and required to complete ten educational sessions with the Substance Awareness Coordinator. More intensive treatment needs result in the family being referred out for services in the community. The responsibility in completing treatment then falls on the parent/guardians and student; the Substance Awareness Coordinator is relied on for program referrals and

financial resources. The student is allowed to return to his/her activity upon the completion of sessions with the Substance Awareness Coordinator and a negative urine screen. After a positive test, students are placed back in the eligibility pool after being given a sensible amount of time to cease use.

Negative urine screens result in the students receiving a chance to pick from a prize bowl. Incentives were solicited from local business, including coupons and gift certifications.

Measures

The *American Drug and Alcohol Survey* (ADAS) was chosen to administer to the student body because of its clinical significance. The "adolescent" version of the survey includes 21 tables and is approximately 55 pages long. It is intended for use with students from 6th to 12th grade. The survey asks questions about the students' attitudes towards substance abuse, including perception of harmfulness of drugs, intentions of drug use, ease of obtaining drugs, and peer influence to use drugs. The survey also includes questions of first age of use, where and when they use, and what kinds of problems students may have related to drug use (Rocky Mountain Behavioral Science Institute, 2003).

Results of the ADAS are reported as a group of students, with no individual results provided. The Cronbach alpha reliabilities for the survey's fourteen drug-use scales range from .72 to .94, with the majority in the high .80 to .90 range, demonstrating students' responses are consistent over time. These fourteen scales include alcohol,

drunk, marijuana, cocaine, inhalants, uppers, downers, heroin, LSD/other psychedelics, PCP, Ritalin, narcotics other than heroin, ketamine, and ecstasy. The survey has scales and questions to avoid student inconsistent responses and exaggerated drug use. If this occurs, these surveys are not included in the results of the school. Concurrent and construct validity for the ADAS is demonstrated by comparing results of students taking the ADAS with the national average of drug use developed by the Monitoring the Future Study.

Procedure

The entire high school student body was administered the *American Drug and Alcohol Survey* in February 2005 and February 2006. Plans are to give the survey yearly, again in February of 2007 and 2008 as follow-up.

Proposed Data Analysis

A repeated measure design on the ADAS will be used to examine change over time in the student self-reported drug use. Urinalysis results from the student drug-testing program will also be analyzed to determine whether or not there is a pattern of specific drug use among students.

CHAPTER THREE

RESULTS

Self Report of Drug and Alcohol Use

Prior to the implementation of the random student drug-testing program, the *American Drug and Alcohol Survey* was administered in February of 2005. A total of 767 students, 79% of school population completed the anonymous survey. Across grade levels, 79%, 85%, 78%, 76% of each grade enrollment was tested from 9th, 10th, 11th, and 12th grade, respectively. The Cronbach alpha reliability score for the drug use scales on the survey averaged around .90. Students reported alcohol and marijuana usage higher than the national average for 12th graders, while usages for other drugs were less than the national percentages. See Tables 1 and 2 below for student reports of alcohol and marijuana usage.

Table 1

Student Report of Alcohol Use on American Drug and Alcohol Survey, February 2005

	9th Grade	10th Grade	11th Grade	12th Grade	National 12th grade average
Ever tried alcohol	60%	72%	78%	81%	77%
Alcohol use within past 12 months	56%	69%	73%	75%	70%
Alcohol use within past month	27%	38%	44%	51%	48%

Table 2

Student Report of Marijuana Use on American Drug and Alcohol Survey, February 2005

	9th Grade	10th Grade	11th Grade	12th Grade	National 12th grade average
Ever used marijuana	19%	24%	45%	56%	46%
Marijuana use in past 12 months	17%	22%	38%	45%	35%
Marijuana use in past month	8%	8%	19%	21%	21%

Student self-report of being drunk, specifically for students in 11th and 12th grades, was higher when compared to the national average across all timeframes (i.e., within past month, within past 12 months; see Table 3 below).

Table 3

Student Report of Being Drunk for Those Students who Report Ever Having Tried Alcohol on American Drug and Alcohol Survey, February 2005

	9th Grade	10th Grade	11th Grade	12th Grade	National 12th grade average
Been Drunk	28%	50%	58%	70%	58%
Been drunk within past 12 months	23%	43%	51%	60%	48%
Been drunk within past month	8%	23%	33%	38%	31%

Table 4 below depicts student report of cigarette usage. Students in this school reported smoking cigarettes equal to or below that of the national average for 12th graders.

Table 4

Student Reports of Cigarette Use on American Drug and Alcohol Survey, February 2005

	9th Grade	10th Grade	11th Grade	12th Grade	National 12th grade average
Ever used cigarettes	31%	28%	45%	45%	54%
Used cigarettes within past month	16%	11%	24%	24%	24%

Table 5 shows the percentages of students reporting ever having tried a drug, other than marijuana. All reported drug usage is below the reported national 12th grade average. Noticeably higher percentages of use were reported by 12th graders for inhalants, downers, tranquilizers, and hallucinogens. Inhalant use was also reported by 9th graders to be used heavily.

Table 5

Student Reports of Illicit Drug Use on American Drug and Alcohol Survey, February 2005

	9th Grade	10th Grade	11th Grade	12th Grade	National 12th Grade Average
Cocaine	<1%	<1%	4%	4%	8%
Inhalants	7%	3%	3%	6%	11%
Nitrites	<1%	2%	<1%	2%	2%
Downers	0%	2%	2%	6%	9%
Tranquilizers	2%	2%	4%	6%	10%
Hallucinogens	1%	3%	4%	5%	11%
PCP	2%	1%	1%	1%	3%
Heroin	2%	1%	<1%	1%	2%
Narcotics other than heroin	<1%	2%	3%	7%	13%

Student reports of where they have used drugs other than alcohol are shown in Table 6. The highest reported use of drugs across grade levels was at parties and at night with friends. Reports for 11th and 12th graders were highest for these categories as well as

across most categories (e.g., right after school, while driving around, at home (parents did not know)). Reports of use were high for before school events for 12th graders, and high reports of use right after school events for both 11th and 12th graders.

Table 6

Student Reports of where they have used Drugs other than Alcohol on American Drug and Alcohol Survey, February 2005

	9th Grade	10th Grade	11th Grade	12th Grade
On the way to school	1%	<1%	4%	5%
During school hours at school	0%	0%	2%	2%
During school hours away from school	<1%	<1%	5%	5%
Right after school	5%	2%	13%	14%
Before school events	3%	3%	9%	13%
At school events	2%	0%	3%	7%
After school events	3%	3%	9%	16%
At parties	11%	15%	31%	40%
At night with friends	15%	22%	34%	41%
While driving around	5%	3%	14%	20%
At home (parents knew)	<1%	<1%	1%	3%
At home (parents did not know)	5%	6%	15%	22%

Results from Random Student Drug-Testing

Students were drug tested during the 2005-2006 school year. Collectively 201 students were randomly drug tested throughout the year, this comprised 20.4% of the student body. Of the students tested, 24.9%, 29.9%, 203.4%, and 21.9% were in grades 9th through 12th, respectively. Of the 201 students tested, 52.7% were male and 47.3% were female. Table 7 shows the student composition across categories of students involved with the student drug-testing program.

Table 7

Student Composition across Categories of Involvement in Drug-Testing Program

	Frequency	Percentage
Grant Athlete	172	85.6%
Non-Grant	3	1.5%
Volunteer	4	2.0%
Grant Non-competitive	18	9.0%
Parker	4	2.0%

Of the 201 tests, 194 of the students were tested on the day they were originally randomly selected. Absences caused 7 of the tests to be made up on the subsequent testing day. Out of the 201 student drug test results, 195 were negative and 6 were

positive. Of the positive results, all urine samples tested positive for marijuana.

Student Reports Post Drug-Testing

The *American Drug and Alcohol Survey* was administered to the students again in February of 2006 with a total of 764 students, which was 79% of school population. Across grade levels, 81%, 80%, 80%, 72% of each grade enrollment was tested from 9th, 10th, 11th, and 12th grade, respectively. The Cronbach alpha reliability score for the drug use scales on the survey again averaged around .90.

Student reports of ever trying alcohol or marijuana remained similar to pre-testing survey results in 9th and 10th Grades; however, there was a pattern of decreasing number of students reporting even trying alcohol or marijuana in 11th and 12th grades; furthermore the students' reports averaged closer to or less than the national average of 12th graders (see Tables 8 and 9 below). Student reports of alcohol use and being drunk across the past 12 months did not decrease compared to pre-testing results. In most aspects, reports of alcohol use increased across grade levels, while being drunk remained stagnant or decreased slightly. Table 10 shows student report of ever having tried different illicit drugs. Results show a noticeable increase in incoming freshman for the 2005-2006 reporting higher percentages of use compared to both the previous year reports within this student population as well as compared to the national average.

Table 8

Student Reports of Marijuana Use on American Drug and Alcohol Survey, February 2005 and 2006

	2004-2005					2005-2006				
	9th	10th	11th	12th	National 12th Grade Average	9th	10th	11th	12th	National 12th Grade Average
Ever used marijuana	19%	24%	45%	56%	46%	15%	29%	33%	44%	45%
Marijuana use in past 12 months	17%	22%	38%	45%	35%	11%	20%	24%	34%	34%
Marijuana use in past month	8%	8%	19%	21%	21%	5%	12%	9%	10%	20%

Table 9

Student Reports of Alcohol Use on American Drug and Alcohol Survey, February 2005 and 2006

	2004-2005					2005-2006				
	9th	10th	11th	12th	National 12th Grade Average	9th	10th	11th	12th	National 12th Grade Average
Ever tried alcohol	60%	72%	78%	81%	77%	61%	67%	76%	79%	75%
Alcohol use within past 12 months	56%	69%	73%	75%	70%	51%	63%	74%	76%	69%
Alcohol use within past month	27%	38%	44%	51%	48%	29%	37%	42%	52%	47%
Been Drunk	28%	50%	58%	70%	58%	32%	47%	59%	65%	58%
Been Drunk within past 12 months	23%	43%	51%	60%	48%	28%	38%	51%	57%	48%
Been Drunk within past month	8%	23%	33%	38%	31%	14%	22%	27%	37%	30%

Table 10

Comparison of Student Reports of Ever having Tried an Illicit Drug on American Drug and Alcohol Survey, February 2005 and 2006

	2004-2005				2005-2006			
	9th Grade	10th Grade	11th Grade	12th Grade	9th Grade	10th Grade	11th Grade	12th Grade
Cocaine	<1%	<1%	4%	4%	2%	4%	3%	3%
Inhalants	7%	3%	3%	6%	10%	5%	4%	6%
Nitrites	<1%	2%	<1%	2%	<1%	<1%	<1%	<1%
Downers	0%	2%	2%	6%	0%	3%	3%	6%
Tranquilizers	2%	2%	4%	6%	0%	3%	4%	9%
Hallucinogens	1%	3%	4%	5%	2%	3%	5%	3%
PCP	2%	1%	1%	1%	1%	2%	<1%	0%
Heroin	2%	1%	<1%	1%	1%	2%	<1%	0%
Narcotics other than heroin	<1%	2%	3%	7%	3%	4%	7%	4%

Table 11 and Table 12 tracks the same student reports across the two years (i.e., 9th graders in 2005 and 10th graders in 2006). These findings show an increase in use, specifically alcohol and marijuana, among students as they progress to the next grade level. There was a noticeable decrease in reports from 11th graders in 2004-2005 to their reports as 12th graders in 2005-2006 across most drug types (i.e., marijuana, cocaine, downers, hallucinogens, PCP and heroin) for both timeframes, with the exception of reports of use of downers within the past twelve months which increased.

Table 11

Comparison of Student Reports across Progression to Next Grade Level for Drug and Alcohol Use within the Past Month on American Drug and Alcohol Survey, February 2005 and 2006

	9th Grade 04-05	10th Grade 05-06	10th Grade 04-05	11th Grade 05-06	11th Grade 04-05	12th Grade 05-06
Alcohol	27%	37%	38%	42%	44%	52%
Marijuana	8%	12%	8%	9%	19%	10%
Cocaine	<1%	3%	0%	<1%	<1%	0%
Inhalants	3%	1%	0%	1%	1%	<1%
Downers	0%	1%	1%	2%	2%	1%
Hallucinogens	<1%	1%	0%	2%	2%	0%
PCP	<1%	<1%	<1%	0%	0%	0%
Heroin	2%	0%	0%	0%	<1%	0%
Narcotics other than heroin	0%	3%	0%	0%	0%	0%

Table 12

Comparison of Student Reports across Progression to Next Grade Level for Drug and Alcohol Use within the Past 12 Month on American Drug and Alcohol Survey, February 2005 and 2006

	9th Grade	10th Grade	10th Grade	11th Grade	11th Grade	12th Grade
	04-05	05-06	04-05	05-06	04-05	05-06
Alcohol	56%	63%	69%	74%	73%	76%
Marijuana	17%	20%	22%	24%	38%	34%
Cocaine	<1%	4%	0%	2%	2%	1%
Inhalants	5%	4%	0%	2%	2%	1%
Downers	0%	3%	2%	3%	2%	4%
Hallucinogens	<1%	2%	1%	3%	3%	<1%
PCP	2%	1%	<1%	<1%	1%	0%
Heroin	2%	2%	<1%	0%	<1%	0%
Narcotics other than heroin	0%	3%	0%	<1%	1%	0%

Table 13 shows differences across grade levels for different frequency or intensity of drug and alcohol use. Students who reported "no use" increased across 10th, 11th, and 12th grades for the 2005-2006 survey year as compared to the 2004-2005 survey year. Student reports show an increase in low and high use from the 2004-2005 survey year to the 2005-2006 survey year.

Table 13

Comparison of Student Drug Involvement on American Drug and Alcohol Survey, February 2005 and 2006

	2004-2005				2005-2006			
	9th	10th	11th	12th	9th	10th	11th	12th
No Use	63.5%	50.0%	38.2%	28.0%	59.3%	51.9%	44.7%	32.7%
Low	21.0%	29.9%	26.4%	29.2%	26.5%	25.0%	30.1%	33.6%
Moderate	10.0%	17.4%	21.3%	27.6%	10.2%	14.7%	16.0%	15.1%
High	5.5%	2.7%	14.1%	15.2%	4.0%	8.4%	9.2%	18.6%

Results from student reports of where they were most likely to use drugs remained similar across the two survey years. Results varied across grade levels; there was a significant decrease of drug and alcohol use at school events across grade levels, specifically 11th and 12th grades. There was also a noticeable decrease in students' reports of using drugs and alcohol before school events across all grade levels and a decrease of drug use after school events (see Tables 14 and 15).

Table 14

Comparison of Student Reports of where they have used Alcohol and Other Drugs on American Drug and Alcohol Survey, February 2005 and 2006

	2004-2005				2005-2006			
	9th	10th	11th	12th	9th	10th	11th	12th
On the way to school	0%	<1%	1%	2%	1%	3%	4%	0%
During school hours at school	1%	1%	4%	2%	1%	3%	3%	2%
During school hours away from school	1%	2%	6%	9%	2%	4%	8%	10%
Right after school	7%	2%	10%	11%	3%	6%	8%	14%
Before school events	4%	5%	12%	15%	2%	4%	8%	13%
At school events	3%	5%	10%	14%	2%	3%	5%	6%
After school events	14%	15%	22%	31%	12%	18%	24%	31%
At parties	35%	48%	55%	63%	35%	45%	56%	64%
At night with friends	36%	50%	59%	67%	39%	44%	60%	69%
While driving around	4%	3%	6%	10%	3%	8%	8%	14%
At home (parents knew)	23%	24%	23%	25%	19%	18%	20%	28%
At home (parents didn't know)	27%	29%	37%	43%	21%	25%	30%	42%

Table 15

Comparison of where Students have used Drugs other than Alcohol across on American Drug and Alcohol Survey, February 2005 and 2006

	2004-2005				2005-2006			
	9th	10th	11th	12th	9th	10th	11th	12th
On the way to school	1%	<1%	4%	5%	2%	5%	3%	4%
During school hours at school	0%	0%	2%	2%	<1%	1%	1%	2%
During school hours away from school	<1%	<1%	5%	5%	3%	5%	7%	4%
Right after school	5%	2%	13%	14%	3%	9%	8%	11%
Before school events	3%	3%	9%	13%	2%	5%	4%	4%
At school events	2%	0%	3%	7%	1%	2%	3%	<1%
After school events	3%	3%	9%	16%	4%	7%	7%	6%
At parties	11%	15%	31%	40%	9%	16%	18%	22%
At night with friends	15%	22%	34%	41%	12%	17%	21%	28%
While driving around	5%	3%	14%	20%	4%	9%	8%	14%
At home (parent knew)	<1%	<1%	1%	3%	1%	2%	3%	<1%
At home (parent didn't know)	5%	6%	15%	22%	4%	12%	9%	12%

Table 16 shows a comparison of student reports across the progression to the next grade level for where students reported using both alcohol and other drugs. The results show a noticeable increase across the different locations from one year to the next for the same cohort of students. On whole, 11th graders in 2004-2005 showed a slight decrease in some categories in reports from 2005-2006 (i.e., on the way to school, during school hours, at school events). Other grades only showed a decrease in the "at home" categories, but this was not consistent with the 11th to 12th grade comparison, which increased in 2005-2006.

Table 16

Comparison of Student Reports across Progression to Next Grade Level for where they have Used Alcohol and other Drugs on American Drug and Alcohol Survey, February 2005 and 2006

	9th Grade 04-05	10th Grade 05-06	10th Grade 04-05	11th Grade 05-06	11th Grade 04-05	12th Grade 05-06
On the way to school	0%	3%	<1%	4%	1%	0%
During school hours at school	1%	3%	1%	3%	4%	2%
During school hours away from school	1%	4%	2%	8%	6%	10%
Right after school	7%	6%	2%	8%	10%	14%
Before school events	4%	4%	5%	8%	12%	13%
At school events	3%	3%	5%	5%	10%	6%
After school events	14%	18%	15%	24%	22%	31%
At parties	35%	45%	48%	56%	55%	64%
At night with friends	36%	44%	50%	60%	59%	69%

While driving around	4%	8%	3%	8%	6%	14%
At home (parents knew)	23%	18%	24%	20%	23%	28%
At home (parents didn't know)	27%	25%	29%	30%	37%	42%

Tables 17 and 18 show that students' who report having friends who use drugs or who have had friends who have used drugs increased from 2004-2005 survey years to the 2005-2006 survey years. There was also a noticeable decrease among non-users in both circumstances for marijuana, with an increase in all other areas.

Table 17

Comparison of Percentage of Students who have Friends who have Used Drugs on American Drug and Alcohol Survey, February 2005 and 2006

	Users		Non-users	
	2004-2005	2005-2006	2004-2005	2005-2006
Marijuana	97%	100%	51%	43%
Cocaine	36%	58%	8%	9%
Uppers	52%	54%	5%	8%
Downers	42%	50%	6%	7%

Table 18

Comparison of Percentage of Students Whose Friends have asked them to Use Drugs on American Drug and Alcohol Survey, February 2005 and 2006

	Users		Non-users	
	2004-2005	2005-2006	2004-2005	2005-2006
Marijuana	77%	85%	10%	9%
Cocaine	10%	8%	2%	3%
Uppers	13%	27%	2%	2%
Downers	13%	19%	1%	2%

Table 19 shows that student reports of high risk behaviors varied across grade levels. Student reports of daily alcohol and marijuana use noticeable decreased or remained stable across grade levels. From the 2004-2005 survey year to 2005-2006 survey year student reports of using marijuana and alcohol together decreased across 9th, 11th and 12th grade.

Table 19

Comparison of Student Reports of High Risk Behaviors on American Drug and Alcohol Survey, February 2005 and 2006

	9th Grade		10th Grade		11th Grade		12th Grade	
	04-05	05-06	04-05	05-06	04-05	05-06	04-05	05-06
Daily alcohol use	<1%	<1%	0%	1%	0%	<1%	2%	1%
Daily marijuana use	2%	2%	0%	1%	3%	2%	2%	1%
Passed out while drinking	10%	13%	15%	21%	27%	24%	40%	34%
Couldn't remember what happened	17%	18%	27%	30%	36%	35%	41%	45%
Did something sexual while drinking and regretted it later	10%	7%	11%	16%	21%	22%	21%	22%
Did something sexual while on drugs and regretted it later	4%	5%	2%	9%	6%	6%	8%	7%
Had a car accident while drinking	<1%	<1%	0%	<1%	<1%	0%	2%	<1%
Had a car accident while on drugs	<1%	<1%	<1%	0%	0%	1%	<1%	<1%

Used marijuana and alcohol together	12%	9%	15%	16%	27%	20%	40%	31%
Used a needle to inject a drug	<1%	1%	2%	<1%	0%	1%	3%	0%
Shared a needle	0%	<1%	2%	0%	0%	0%	2%	0%

Table 20 shows the comparison of each cohort of students as they progress from one grade level to the next year. Data in Table 20 shows that most students report increasing use and high-risk behaviors across most categories from 2004-2005 to 2005-2006. There was a decrease in daily marijuana use from 2004-2005 for 11th graders to 2005-2006 as 12th graders. There were increases of 7% to 10% within the categories of "passed out while drinking" and "couldn't remember what happened" across all grade levels from 2004-2005 to 2005-2006. Reports of using marijuana and alcohol together increased 4% to 5% across grade levels. Reports of doing something sexual while using alcohol or drugs increased across grade levels from 1% to 11%.

Table 20

Comparison of Student Reports across Progression to Next Grade Level for High Risk Behaviors on American Drug and Alcohol Survey, February 2005 and 2006

	9th Grade	*10th Grade*	*10th Grade*	*11th Grade*	*11th Grade*	*12th Grade*
	04-05	05-06	04-05	05-06	04-05	05-06
Daily alcohol use	<1	1%	0%	<1%	0%	1%
Daily marijuana use	2%	1%	0%	2%	3%	1%
Passed out while drinking	10%	21%	15%	24%	27%	34%
Couldn't remember what happened	17%	30%	27%	35%	36%	45%
Did something sexual while on drinking and regretted it later	10%	16%	11%	22%	21%	22%
Did something sexual while on drugs and regretted it later	4%	9%	2%	6%	6%	7%
Had a car accident while drinking	<1%	<1%	0%	0%	<1%	<1%

Had a car accident while on drugs	<1%	0%	<1%	1%	0%	<1%
Used marijuana and alcohol together	12%	16%	15%	20%	27%	31%
Used a needle to inject a drug	<1%	<1%	2%	1%	0%	0%
Shared a needle	0%	0%	2%	0%	0%	0%

CHAPTER FOUR

DISCUSSION

Overall, the results of this study indicate that there was a decrease in drug use in the overall school population based on student responses on the *American Drug and Alcohol Survey*. However, results indicate that there was not a decrease in drug use over time for each cohort of students. Specifically, as each group of students progressed to the next class level, there was a consistent increase in reports of drug and alcohol use across all cohorts. Reports of drug and alcohol use from the incoming 9th grade class for the 2005-2006 school year show an increase in use across numerous drugs and with alcohol. For example, reports of inhalant use increased from 7% to 10%. There was a slight decrease in alcohol use in specific locations or times of day, specifically before and at school events, but there was much stronger decrease within the same cohort of students across survey years in where they reported using drugs other than alcohol. Reports of high risk behaviors also decreased across survey years but still continued to show a steady increase within the same cohorts of students.

At the start of this study the local high school students' reports of alcohol and drug use were at or slightly above the national 12th grade average. When the students were surveyed again after a year of implementation of the random student drug-testing program, they reported decreases in alcohol and drug use resulting in being equal to or

below the national average. Due to limited previous research in this area, it is hard to know what to make of these findings. The results of this study are similar to the results from Coombs and Ryan (1990), which generally indicated decease in drug use throughout the tested population. Results were also comparable to the SATURN program in that there was a generally reported decrease in the school, but limited decrease when it came to alcohol use (Goldberg et al., 2003).

It is not possible to compare the survey results to the drug-testing program because results were only available for the first year of the drug-testing program. In comparison to the school's population, only about 20% of the student population participated in the drug-testing random pool. Out of the students that tested positive on their drug screens, two were athletes, one was involved in noncompetitive extracurricular activities, one was a volunteer, and one was a parker. The parker tested positive seven times over the course of the year. Another student, the volunteer, also tested positive more than once on a mandatory re-test. These results indicate that the consequences on submitting a drug-positive sample may not be sufficient to prevent future drug use. These heavier users that continue to give positive drug screens may require more extensive intervention and possible police involvement. This could be reviewed within the drug-testing policy to make the consequence of the positive drug screen more effective in the prevention of further drug use.

This study extends the results of previous research by addressing the ethical dilemma that stopped the SATURN study. Whereas the SATURN program required students to participate in the drug-testing program, participants in the current study were

not only athletes, but also students engaged in nonathletic extracurricular activities, students applying for parking permits, and students who volunteered to participate (Goldberg et al., 2003). Drug-testing the entire student body would be considered unethical; however, there is concern that the students who participate in the random student drug testing program are not the students most at risk of using illicit substances (Bukstein, 2004). This concern may be valid. The results of this study indicate that a higher proportion of students in the student body reported drug usage on the *American Drug and Alcohol Survey* compared to the percentage of students who tested positive for drug use according to the random drug-testing procedures. A potential avenue for research is to compare self-report to drug test results when a larger proportion of students in the student body participate in a random student drug-testing program.

Besides beginning a random drug-testing program, other changes were implemented at the school during the time of the study. For example, a policy of utilizing a breathalyzer at the entrance to school sporting events was implemented. These other school policies could provide an alternative explanation for the decreased reporting of alcohol and drug use before and at school events. Other observations made by the Substance Awareness Coordinator were that during the second year of the drug-testing program, there was an increase in students voluntarily seeking treatment and assistance for self-disclosed drug use. This occurred without the students even being involved in the random drug-testing pool.

This demonstrates a limitation of the how effective the random drug pool was during the course of the study. During the course of the school year, the size of the pool

for the random student drug-testing program grew as students were added. Unfortunately, as students were added to the pool, the algorithm for random assignment resulted in several students being chosen twice during the year. This was caused by the entire student pool being re-alphabetized each time new student were added. Students who tested positive were also pulled during the next drug-testing date for a mandatory re-test. Students who were absent on the test date they were pulled also were included in the students selected for the following test date.

To determine the effects of implementing the random drug-testing policy in this high school setting, the results from future years of drug-testing need to be examined in comparison with these results. This would also include the upcoming progressive years of results from the *American Drug and Alcohol Survey* in comparison to current results. It would also be beneficial to continue tracking observations of changes in behavior of the student body that could result from the drug-testing policy, as well as taking into account other new policies or changes at the school that could affect the usage results. Eventually having the entire student body being included into the random drug pool would be most beneficial to determine the effectiveness of the policy.

These results indicate that there is an effect of implementing a random drug-testing policy within a high school setting. Long-term effects are difficult to predict but current results would indicate that drug usage reports would continue to decrease over time. The consequences for testing positive should be reviewed and if a student consistently continues to test positive over the course of the school year, stronger consequences should be put in place and police involvement should be considered.

Future studies should also place a focus on the cohorts of students as they continue to progress through grade levels. Results indicating an increased drug and alcohol usage suggest that this is an area that the drug-testing policy is not yet impacting and other additions to a random drug-testing policy need to be explored.

Overall results indicate that drug usage in a high school setting decreased over the course of a year with a drug-testing policy implemented at the school, but that the drug-testing did not have an effect on decreasing use within student cohorts. To continue assessing the strength and consistency of these results in a high school population the entire student body should be included in the pool. Though there is the argument that a policy such as this would be unethical (Bukstein, 2004). Current results indicate that this prospective policy change would be an effective method of determining actual high school drug and alcohol use. As well as, not only potentially including those students most at risk of heavy drug use, but determining, comprehensively, the effectiveness of implementing the drug-testing policy at the high school level.

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